Guiding Questions

1. **Administrative**

   Name of your organisation: GÉANT

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2. **Topic: Governance of European e-Infrastructures**

   a. e-IRG recommended ***an e-Infrastructure umbrella Forum for community building, high-level strategy setting and coordination for the entire e-Infrastructure landscape.*** *This umbrella Forum is not a separate organisation, but a forum in which the user communities and the strategy and coordination bodies for the different parts of the European e-Infrastructure work on a common strategy based on common understanding among each other. The ultimate beneficiary of this effort will be the end users providing integrated user-friendly services easing the work of researchers and providing to them added value.*

      i. *How does the European e-Infrastructure organisation/initiative you represent perceive this idea? Is your organisation/Initiative willing to discuss the framework for such a Forum?*

         GÉANT wishes to be aligned with comparable e-Infrastructures / European initiatives of scale, such as EuroHPC or EOSC. Beyond this, GÉANT remains committed to our continued participation within the e-IRG.

      ii. *Which generic (horizontal) European e-Infrastructure bodies would you like to see in such a Forum? (keeping in mind that the e-Infrastructure landscape is spanning networking, computing, data components and related services). Do you believe that EU e-Infrastructure stakeholders from all layers should participate? Note that in the e-IRG terminology the term electronic (or digital) Infrastructure (e-Infrastructure) includes data infrastructures, although there has been some confusion in some documents in the recent years). Please justify your answer.*

         The inclusion of key e-Infrastructures / European initiatives such as GÉANT, EuroHPC and EOSC would be a necessity. With that benchmark set, we would advocate for the forum to be inclusive, including for data infrastructures.

iii.   *Besides generic (horizontal) e-Infrastructure providers in this Forum do you also envisage some form of user/thematic communities' representation? And what about EU funding agencies or policy makers? Comment on the potential roles of each of these.*

> If data infrastructures such as research infrastructures and thematic clusters were to be included this would also bring in thematic communities. It could be useful to include policymakers and funders too, though one would wish to define different roles for each of these groups e.g. advisory versus implementation. It also pays to observe how other models function in this area; the EIRO Forum, the ESFRI/ERIC community, the 50 EPA-s, and Science Europe and EUA could be invited with their 'customer demands'. Institutions such as the Committee of Regions and the EP ITRE committee could also send representatives to relevant meetings

iv.   *e-IRG can facilitate the process for the establishment of such a Forum as a neutral body/platform. How does your organisation perceive this idea?*

> We consider e-IRG a useful facilitator for such a group given its links to Member States. e-IRG is a proven mature, neutral forum to discuss the topics of common interest.

v.   *[optional] Do you believe that besides a strategy / governance forum a technical / operational forum across all e-Infrastructures would be beneficial?*

> We advocate that the main purpose of e-IRG is to discuss matters related to strategy and coordination, especially in identifying gaps in such areas.

vi.   *What is the expected impact on your governance due to increased coordination between e-Infrastructures?*

> Better coordination is already being conducted through joint projects such as EOSC Future and having a broader forum to promote alignment and collaboration is useful. The forum's primary interest should be to help exchange views regarding strategy and coordination, not governance per-se, and including views of end-user perspectives and the initiatives at the European and Member State levels.

b. Other points/ideas you would like to raise on the topic of governance.

> The e-IRG functions well in its current form. It should be the body to discuss new ideas, new services and new entities and help the e-IRG community modernise and innovate. As such, the e-IRG should be the compass of the community, and not so much an implementing body.

3. **Topic: Compatible policies/interoperable services/operational aspects**

   a. *In the last years the EOSC stakeholders have been working on rules of participation, common or compatible policies and interoperable services in EOSC to enable the federation of e-Infrastructures providers and their services (e.g. EGI, EUDAT, OpenAIRE) and thus facilitate data-driven science to tackle the global scientific and societal challenges. EOSC is working towards the development of an ecosystem of portals at EU/regional/national and in some cases institutional levels to provide added-value services to end users, facilitating also cross-disciplinary research/science, which is required to address the scientific and societal challenges. Work is also underway towards a personalised and smart (AI-based) dashboard for researchers/scientists that will include relevant data/services/workflows/software and other artefacts to ease their work. EuroHPC has been doing similar work to federate the EuroHPC centres and define the rules of participation and sharing of resources among its members.*

      i. *Do you believe that the EOSC and EuroHPC (federation and sharing) paradigms should be expanded to federate data/services across all major European e-Infrastructures?*
      Note: This does not mean that one of them should integrate the other, rather coordinate their strategies and harmonise their policies (as peers) to be able to federate and share the data/services/software etc. for the benefit of the users.

      > Greater policy harmonisation is always useful but we must also recognise the challenges in delivering this in specific contexts such as EOSC and EuroHPC and be realistic about what can be achieved. A long-term objective to form collaborative linkages between the entities should be in place but phased in terms of timing. This is an example of what should be discussed within the e-IRG.

      ii. *Federation of all e-Infrastructures would require compatible policies and interoperable services, so that they can be integrated in a federated portal of portals and ultimately in the personalised*

dashboards of end users. Do you believe that this can be done in the coming years or should priority be given first to each of the areas, e.g. EOSC and EuroHPC, before attempting to work together at such (technical) level?

> Bodies such as EOSC and the (new) EuroHPC centres are far from becoming effectively interoperable as entities, let alone with regard to service provision for end users. The carefully considered development of how these bodies are to be realised, along with initiatives such as the Common European Data Spaces or EuroQCI, must first be conducted. Discussions regarding a single operational federation of all e-Infrastructures is premature.

iii.   *[optional] Authentication and Authorisation Infrastructures (AAI), including blueprint architectures, have been developed (e.g. GEANT and EGI) and there has been significant effort to make them interoperable and use them across horizontal and thematic e-Infrastructures. Do you find this as an example of collaborative operational work and interoperable policies that can be expanded to other e-Infrastructures and more communities?*

> Yes. Work is underway in this regard via the integration of cluster AAI in the EOSC and EuroHPC environments.

iv.   *Resource access models and policies differ between HPC (more based on call for proposals with peer-review evaluation committees for longer time, e.g. 1 year) and HTC (faster process and cycles based on policies and more opportunistic, e.g. policy-based access to support national access to EU thematic collaborations such as ESFRI projects or ERICs). Furthermore, resource ownership models are different, e.g. EuroHPC owns up to 50% of the EU access capacity of EuroHPC systems, while in HTC the vast majority of resources and their access are national. The above may hinder interoperability and cross e-Infrastructure usage (i.e. HTC-HPC). Do you see space for cooperation/coordination in this area? If this is the case, which of your organisation's policies need to be adapted.*

> We see space for cooperation in this area in order to understand if the existing capacity to these infrastructures will require specialised network or AAI services. Specifically, we must point out that the European Research Area includes both Member State level and EU

> programme-related organisations, and therefore the rules across the ERA are required to be the same and align to best practices.

v. *There is a plan to update the EU Charter of Access to Research Infrastructures (including e-Infrastructures). Do you see a role of the future e-Infrastructure Forum at strategy or technical levels in this update?*

> GÉANT would like to utilise its position within the e-IRG to be a part of the Charter discussion, in order to help formulate strategic positions.

vi. *What about federation coordination with similar industrial efforts (e.g. GAIA-X) and industrial e-Infrastructure/service providers (EU and non-EU) or other thematic data spaces in the super portal mentioned above? There are ongoing efforts in some of these, such as the integration of commercial services/resources, in-line with the e-IRG vision of 2013 so that "users enjoy the freedom to choose the services they need from a mix of public e-Infrastructure and commercial services". Do you see this as a priority for the coming years?*

> In terms of EOSC, this a priority in the 2025-2027 period. It should be in the planning but is not the initial focus of work. The mentioning of a super portal is unprecedented at this point. Currently, GÉANT is working on solutions that provide connectivity and services to end-users via its transnational backbone and NREN community in a federated form.

vii. *Are there in your opinion other important operational aspects that need to be harmonised to facilitate a well-coordinated federated European e-Infrastructure?*

> Standardisation of API interfaces to allow interoperability of front-end portals with various levels of middle ware provided by e-infrasructures. Standardisation work performed by EOSC working groups is a key foundation to be built upon to ensure success in this area.

viii. *What is the expected impact on operational aspects due to increased coordination between e-Infrastructures?*

> Until such coordination is defined, this question is difficult to answer, beyond standard expectations of increasing capacity. A

more interesting impact to gauge would be to understand how the e-IRG could improve the cultural and strategic aspects of coordination between e-Infrastructures.

4. **Topic: Cost and Business Models, Funding/Sustainability**

   a. Understanding costs and having business models for e-Infrastructures is important for planning their operation and their sustained funding, including renewing (procuring) the actual infrastructure over the years. A joint group between the EOSC Steering Board and e-IRG have identified a gap in this area that needs to be developed in the future, especially given the transition of EOSC Core and part of EOSC Exchange towards an operationalised framework (based on procurement vs. short lived projects).

      i. Does your infrastructure have a cost model and methodology to track its costs? If federated, is there a common cost model/methodology across the national components?

         GÉANT maintains a cost-sharing committee that calculates on an annual basis or as otherwise required a set of individual costs to members for services delivered by the organisation, and a tariff of charges for any services delivered to other parties. It is also to be noted that GÉANT is a beneficiary of EC funds via (various) project forms.

      ii. If not, do you see the need for an establishment of lightweight methodologies and cost models for the different layers (networking, computing, data) for better understanding the costs of e-Infrastructures (both CAPEX and OPEX), across EU e-Infrastructures and also across national entities? See as an example the e-FISCAL methodology/model[1] for computing costs.

         Not applicable.

      iii. Do you believe that collecting and sharing different approaches (around methodologies and cost models) across Europe could provide value to the EU or national actors?

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[1] Methodology | e-FISCAL project (efiscal.eu)

> This reads as a reasonable and useful exercise, so long as different legal backgrounds from Member States are simultaneously considered with specialist expertise.

    iv. Does the e-Infrastructure you represent have a business model and sustained funding to facilitate a sustained operation?

> Yes.

    v. *What is the expected impact on your funding/business model due to increased coordination between e-Infrastructures?*

> Decline to answer.

5. Topic: Other

    a. Any other topics or points in this area of e-Infra cooperation/coordination that you would like to discuss in a potential future Forum or any comments.

        i. What are the main or potential obstacles for the end users to conduct cross e-Infrastructure research activities that you are aware of? Lack of awareness (of services availability), administrative burden, ease of use and added value, fragmented environment (multiple e-Infras, multiple EU funding programmes, coordination among EU and national players), different priorities, different policies (access, resource usage, etc). How can the identified or potential obstacles be overcome?

> Different legal environments for the e-infrastructures, different existing funding backgrounds, dependencies on varied project funding and rules and fragmented service offerings. There is also a high administrative burden when establishing tailored services across multiple e-infrastructures. How can these be overcome? Starting with an establishment of a common vision for 21st century digital research would be a first step.

        ii. e-IRG has recommended increasing coordination efforts between the e-Infrastructures for a long time now, what would be the business areas mostly affected from such increased coordination in your e-Infrastructure organisation?

Outreach efforts to other e-infrastructures, projects, initiatives, research infrastructures and policy makers.